Alberto Rosmaninho Mações Torres

EVALUATION OF THE STRATEGIES AND TECHNIQUES USED IN THE PREVENTION AND DECREASE OF PERIODONTAL DISEASES BY ORAL HEALTH CARE PROVIDERS IN SCHOOLS.

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“Study presented to Universidade Fernando Pessoa, as part of the requirements to obtain the Master's Degree in Dental Medicine"

Resumo

Objetivo: Perceber que conhecimentos possuem os profissionais responsáveis pela saúde escolar para prevenir e detetar gengivite induzida por placa bacteriana.

Métodos: Foi elaborado um questionário com 16 perguntas de escolha múltipla, o qual foi enviado por email para todos os profissionais responsáveis pela saúde escolar da Região Norte de Portugal.

Resultados: De um total de 66 profissionais responsáveis por a área de saúde escolar da região norte de Portugal, obteve-se 30 respostas (45,5%). Verificou-se que na região norte, a promoção de saúde oral escolar é realizada maioritariamente por enfermeiros. O estudo realizado demonstra um défice de preparação dos enfermeiros na prevenção de gengivite induzida por placa bacteriana. Verifica-se um possível desconhecimento quanto ao fator causal da doença bem como a sua possível progressão para periodontite. Constata-se falhas na preparação dos pais, educadores e crianças para detenção de sintomas de inflamação gengival e desconhecimento nas vantagens da utilização de escovilhão interdentário e em relação a soluções de bochecho à base de clorexidina.

Conclusão: O estudo realizado demonstra a necessidade de uma maior comunicação entre dentista e enfermeiro. É necessário preparar estes profissionais em relação à etiologia da doença, consequências da sua progressão, doenças sistémicas associadas e técnicas de higiene oral apropriadas. É importante capacitar os enfermeiros para que possam instruir os professores, pais e crianças a adquirirem conhecimentos simples de prevenção e deteção de gengivite.

Palavras Chave: Gengivite, doença periodontal, enfermeiros, conhecimento de higiene oral

Abstract

Objective: To understand what knowledge oral health care providers have to prevent and detect plaque-induced gingivitis.

Methods: A questionnaire was developed with 16 multiple-choice questions and checkboxes answers, which was sent by email to all professionals responsible for school health in the Northern Region of Portugal.

Results: Among 66 professionals responsible for the school health area of the northern region of Portugal, 30 answers (45.5%) were obtained. It was verified that, in the northern region, the promotion of oral health at school is carried out mainly by nurses. The study shows a lack of preparation from nurses relatively to the prevention of plaque-induced gingivitis. There is a possible lack of knowledge about the causal factor of the disease as well as its possible progression to periodontitis. Failure to prepare parents, educators and children for gingival inflammation symptoms and lack of knowledge of the advantages of using interdental brush and chlorhexidine-based mouthwash solutions are reported.

Conclusion: The study shows the need for greater communication between dentists and nurses. It is necessary to prepare the latter in relation to the etiology of the disease, consequences of its progression, associated systemic diseases and appropriate oral hygiene techniques. It is important to train nurses so that they can instruct teachers, parents and children to acquire simple knowledge to prevent and detect gingivitis.

Keywords: Gingivitis, periodontal disease, nurse, oral health knowledge

Acknowledgments

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To all the Professors of "Universidade Fernando Pessoa", who contributed to my academic background.

Special thanks to my parents and siblings for their support and dedication during this journey.

Thank you to all of the true friends I have met for the past 5 years, with whom I shared unforgettable moments.

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I . Introduction

Plaque-induced gingivitis is inflammation of the gingiva resulting from bacteria located at the gingival margin (Loe, 1965). Epidemiologic studies indicate that gingivitis of varying severity is nearly universal in children and adolescents (Paper, 2005; Pari *et al.*, 2014). Epidemiologic data have shown plaque-induced gingivitis to be prevalent at all ages of dentate populations (Stamm, 1986; Bhat, 1991; Gjermo *et al.*, 2002; Hugoson and Norderyd, 2008) and has been considered to be the most common form of periodontal disease (Of, 2000).

Chronic periodontitis usually starts as untreated plaque-induced gingivitis (Page and Kornman, 1997; Schätzle *et al.*, 2003, 2004) and is thought to account for 30–35% of all tooth extractions (Lang and Lindhe, 2015).

There is a growing evidence that periodontal disease is associated with an increased risk of systemic illnesses such as cardiovascular disease, stroke and diabetes mellitus (Howell *et al.*, 2001; Buhlin *et al.*, 2002; Demmer, Desvarieux and Jacobs, 2008; Dietrich *et al.*, 2008; Holmlund, Holm and Lind, 2010; Koromantzos *et al.*, 2011) . Statistical data, indicate diseases of the circulatory system as the main cause of death in Portugal, which were mainly associated to cerebrovascular diseases and ischemic heart disease. Endocrine, nutritional and metabolic diseases are also some of the main causes of death in the country, of which Diabetes Mellitus playing the leading role (Instituto Nacional de Estatística, 2017).

This way, it is important to detect, prevent and treat plaque-induced gingivitis in order to avoid the progression to periodontitis and associated irreversible damages.

Knowledge, behaviors, and beliefs established early in life tend to persist into adulthood. Thus, oral health professionals have a crucial role to play in promoting health and preventing oral diseases, and can enable children, parents and educators to identify symptoms of gingival inflammation and acquire knowledge to prevent periodontal diseases.

The Portuguese oral health promotion program is carried out mainly by nurses. Studies from different parts of the world show lack of oral health knowledge among nurses, specially about what concerns treating and preventing periodontal diseases (Ward *et al.*, 2010; Wooten *et al.*, 2011; Morais, 2012; Doğan, 2013; Rajesh *et al.*, 2013).

The purpose of this study was to assess the knowledge of school oral health care providers regarding plaque-induced gingivitis and understand if this knowledge is conveyed to children, parents and teachers.

II - Material and Methods

A questionnaire was developed with 16 multiple-choice questions and checkboxes answers, which was sent by email to all professionals responsible for school health in the Northern Region of Portugal.

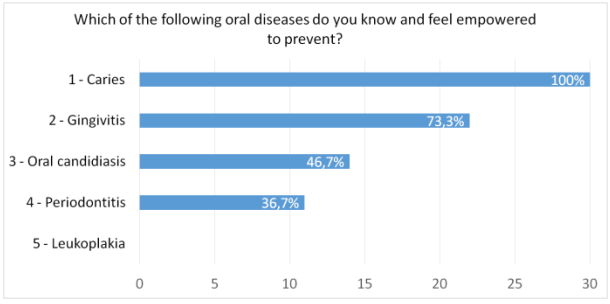
III - Results

The number of professionals responsible for school health in Northern Region of Portugal is not up-to-date. However, ArsNorte department informed that around 66 professionals are responsible for school health in Northern Region of Portugal.

Among 66 professionals, 30 answers (45.5%) were obtained. After analyzing the results, we verified that the school health program in the northern region is carried out mainly by nurses (Graph 1).

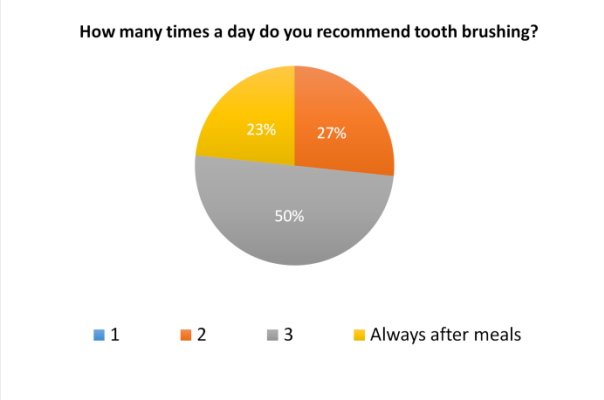
Most nurses consider it important to include general body hygiene instructions and good eating habits during oral health promotion (Graph 2 and 3).

All nurses feel able to prevent caries, 73.3% consider themselves capable of preventing gingivitis and 36.7% periodontitis. About half of the respondents (46.7%) consider themselves to be knowledgeable about oral candidiasis prevention and none feels able to prevent leucoplakias (Graph 4).

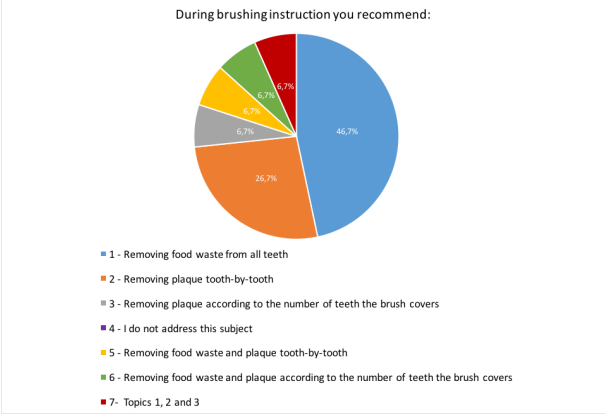


The most used brushing technique is the Fones Technique (67%), followed by the Stillman Modified Technique (17%) and by the Bass Modified Technique (Graph 5).

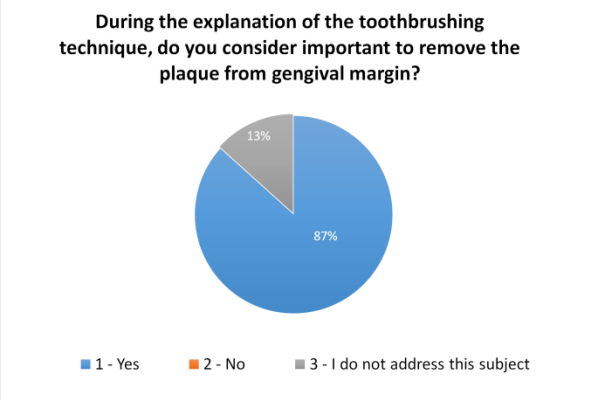
The number of daily brushing most recommended by nurses is 3 (50%); 27% recommend brushing 2 times a day and 23% consider that teeth should always brushed after meals. (Graph 5 and 6)



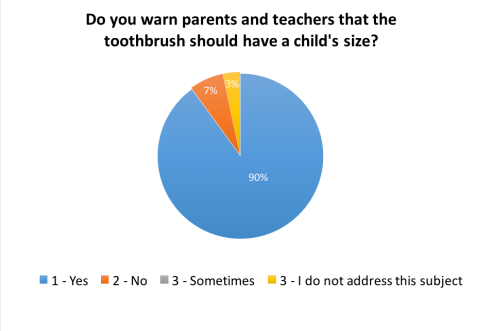
Following this reasoning, among the 30 nurses, 14 recommend dental brushing only with the intention of removing food waste (46.7%) and just 26.7% of professionals recommend remove the plaque tooth-by-tooth as the only option (Graph 7).

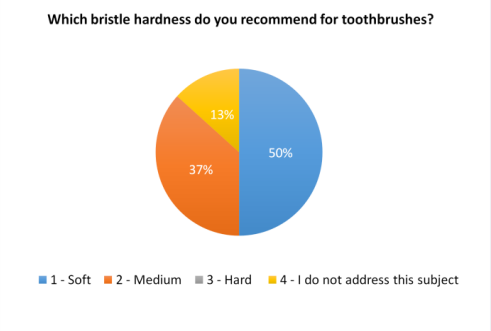


Most of the professionals emphasize the importance of removing plaque from the gingival margin (87%); 13% does not address this subject (Graph 8).

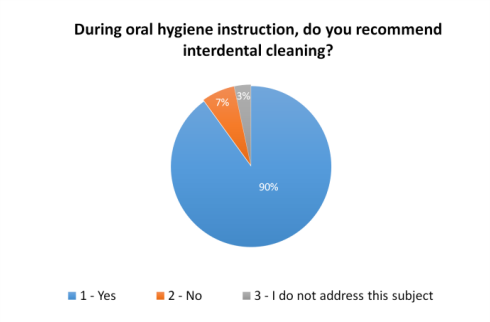


Most nurses warn parents about the fact that the toothbrush should have a child's size. The most recommended toothbrush bristles are the soft ones (50%); 37% recommend medium hardness and 13% do not address this subject (Graph 9 and 10).



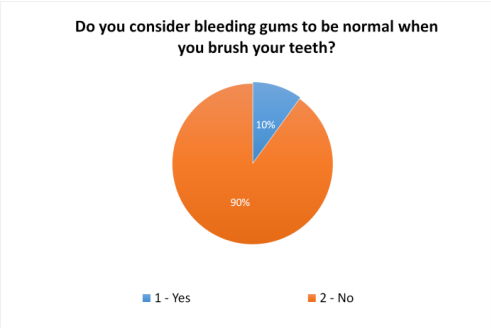


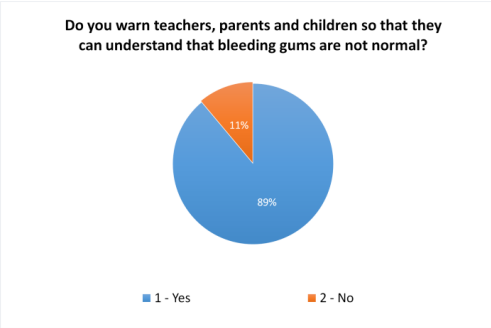
Most professionals promote interdental cleaning (90%), in which dental floss is the most recommend (96%) (Graph 11 and 12).

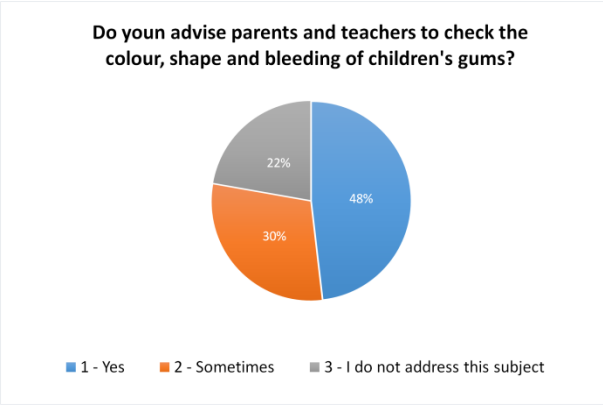


Regarding mouthwash solutions, 54% recommend only fluoride solutions. 23% recommend solutions based on fluoride or chlorhexidine, depending on the child's need. A significant percentage of nurses did not address this issue (23%) (Graph 13).

Lastly, 90% of professionals consider bleeding gums to be abnormal; however, only 48% of these nurses advise parents and teachers to check the bleeding, color and shape of the children's gums. 22% do not address this issue and 30% advise from time to time. Among the nurses who consider bleeding gums abnormal, 89.0% alerted parents and teachers to this situation (Graph 14, 15 and 16).







IV – Discussion

After analyzing and comparing the answers, we found that the great majority of nurses feel capable of preventing gingivitis (73.3%), but only 36.7% are able to prevent periodontitis.

If the nurse considers having the knowledge of how to prevent gingivitis, he/she should also be able to prevent periodontitis, since the best way to prevent periodontal disease is through an effective bacterial plaque control (Löe, 2000; Hujoel *et al.*, 2005).

Following this reasoning, in the question about the purpose of dental brushing, almost half of the nurses (46.7%) consider tooth brushing important only to remove food waste. Thus, it is plausible to suppose an ignorance of the possible evolution of untreated gingivitis for periodontitis as well as the causal factor of both diseases.

A significant number of professionals (87%) emphasize the bacterial plaque removal from the gingival margin, but these data are not consistent with the answers to the previous question, in which 73.5% of nurses consider it important to remove bacterial plaque during brushing, among which only 29.6% consider the tooth-by-tooth removal of bacterial plaque during brushing as the only option.

The questionnaire showed good results in relation to the indication of toothbrushes with child size (90%) and the use of dental floss for interdental cleaning (96%). However, scientific evidence suggests greater ease and effectiveness in the use of interdental brush (Waerhaug, 1976; Wolffe, 1976; Christou *et al.*, 1998; Slot, Dörfer and Van der Weijden, 2008). Since children are the target population, and given their manual dexterity, one would expect this to be the most advisable tool to clean interdental areas.

Studies have demonstrated the efficacy of chlorhexidine-based solutions in reducing bacterial flora and improving gum health (Bosman and Powell, 1977; Van der Weijden *et al.*, 2015). However, only 23% of nurses recommend this type of solution. Most professionals indicate fluoride solutions as the only option (54%) and a significant percentage of professionals (23%) do not address this issue.

Most nurses considered gum bleeding to be abnormal when brushing their teeth (90%). Among these nurses, 89% alert parents and children to this issue. However, only 48% of these nurses always instruct parents to identify symptoms of gingival inflammation, such as gingival color, shape, and bleeding. This way, it is plausible to extrapolate that there are gaps in the preparation of these professionals to prevent gingivitis, since information is not passed to parents, teachers and children, so that they can identify symptoms of gingival inflammation.

V – Conclusion

This study allows us to conclude that there is a deficiency in the preparation of professionals responsible for school health in relation to instructions for prevention and reduction of plaque-induced gingivitis. There is a possible lack of knowledge regarding the progression of gingivitis to periodontitis, as well as the association of bacterial plaque as the main causal factor for both diseases.

We can verify that a significant percentage of nurses do not prepare parents, teachers and children to identify gingival inflammation.

There are gaps in the preparation of professionals regarding the use of mouthwash solutions, especially in relation to chlorhexidine solutions.

In this study, we concluded that nurses do not have enough knowledge relatively to the advantages of using interdental cleaning brushes.

The study carried out shows the need for greater communication between dentists and nurses. These nurses act at a crucial stage in the development of the individual. Knowledge and behavior that tend to persist in adulthood are acquired in childhood. This means these professionals have the opportunity to instill oral health habits that aim to prevent other pathologies besides caries.

We can get to the conclusion that it is necessary to prepare these professionals in relation to the etiology of the disease, to the consequences of its progression, to associated systemic diseases and appropriate oral hygiene techniques. It is also important to train nurses so that they can instruct parents, teachers and children to acquire simple knowledge for gingivitis detection, such as checking the color, shape and bleeding of children's gums.

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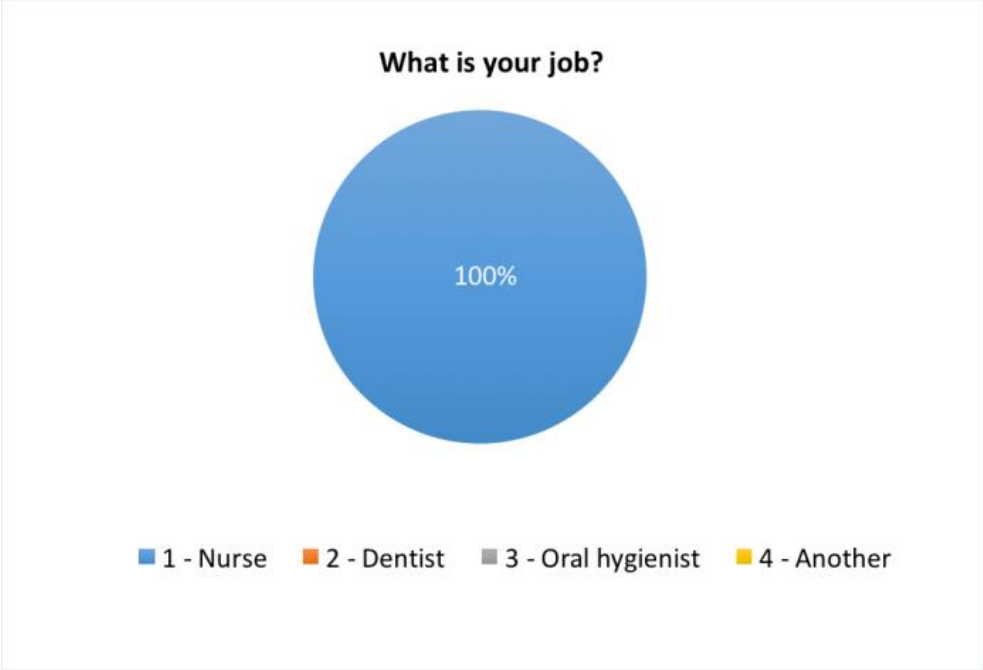
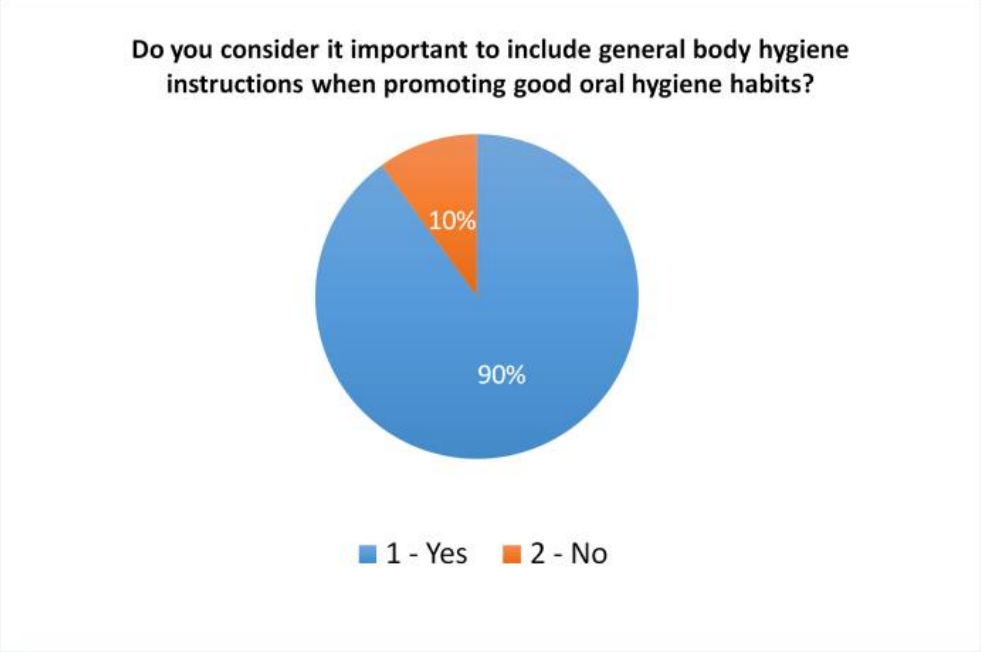
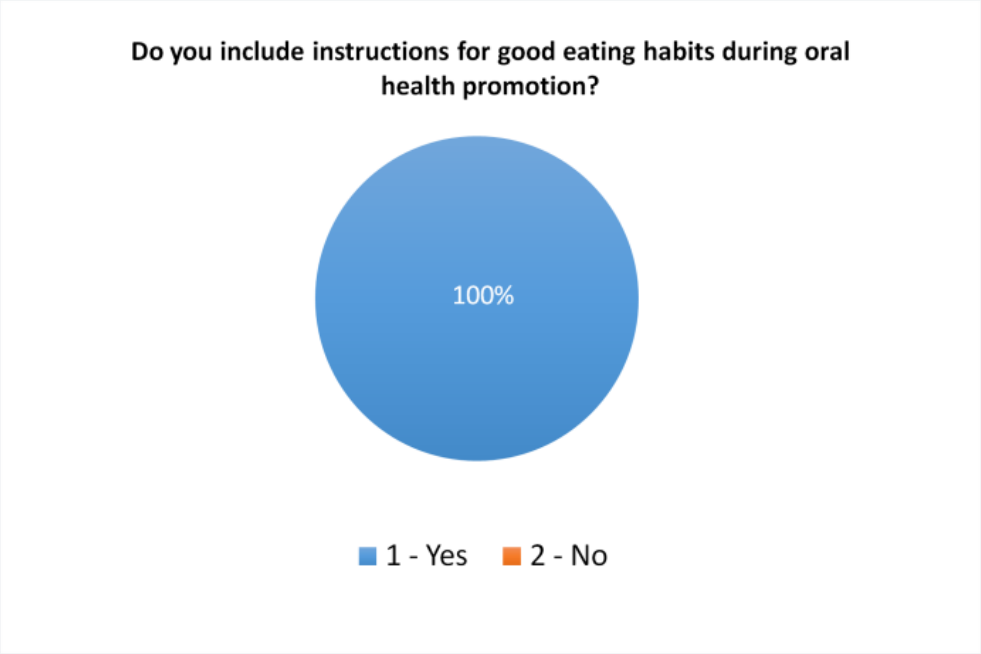
VII-Attachements



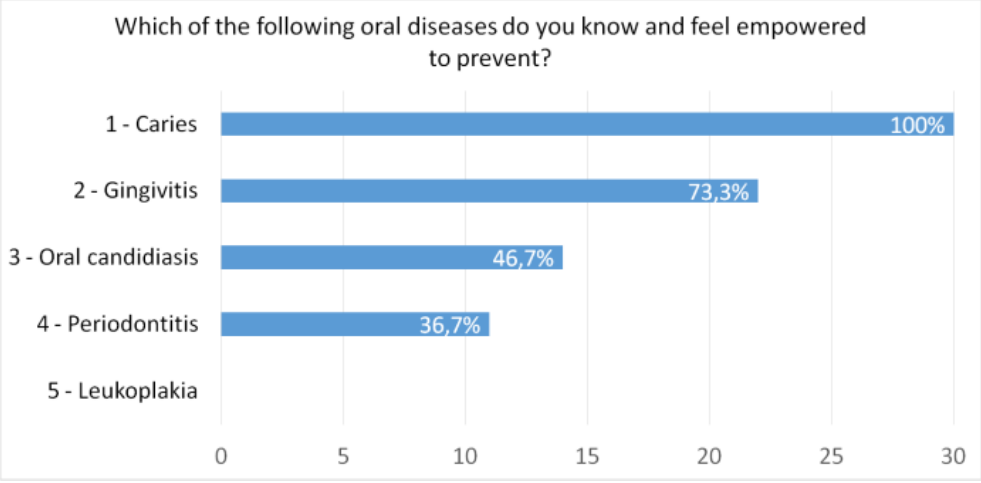
Graph 1



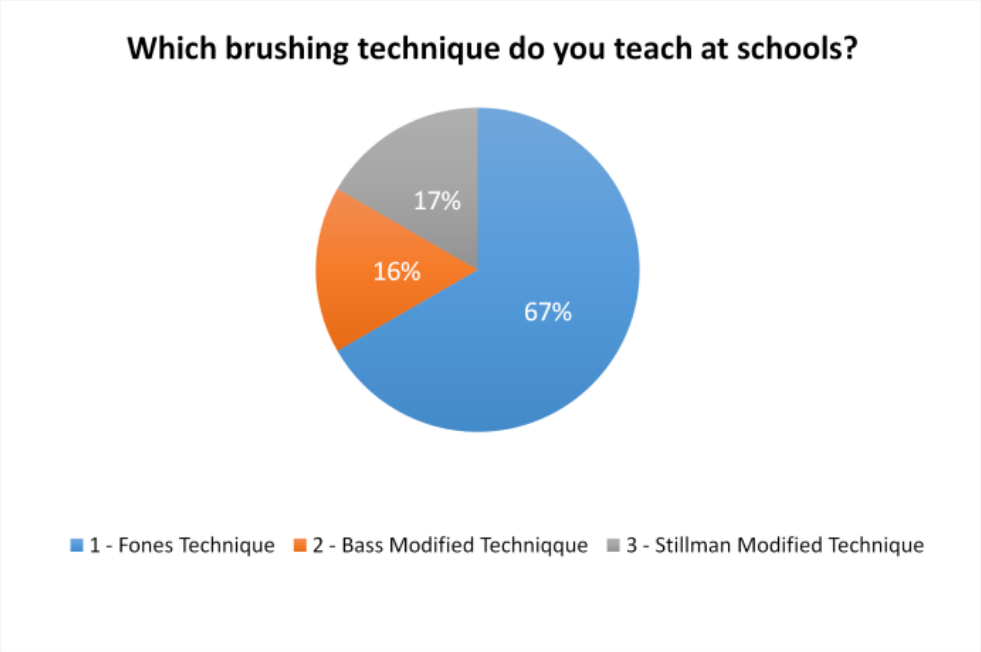
Graph 2



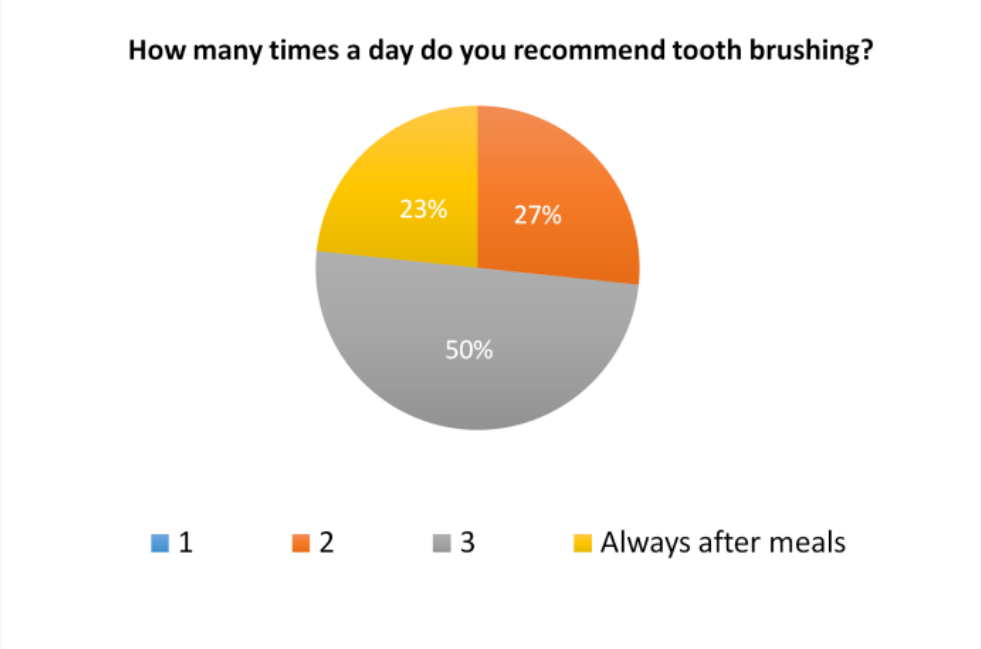
Graph 3



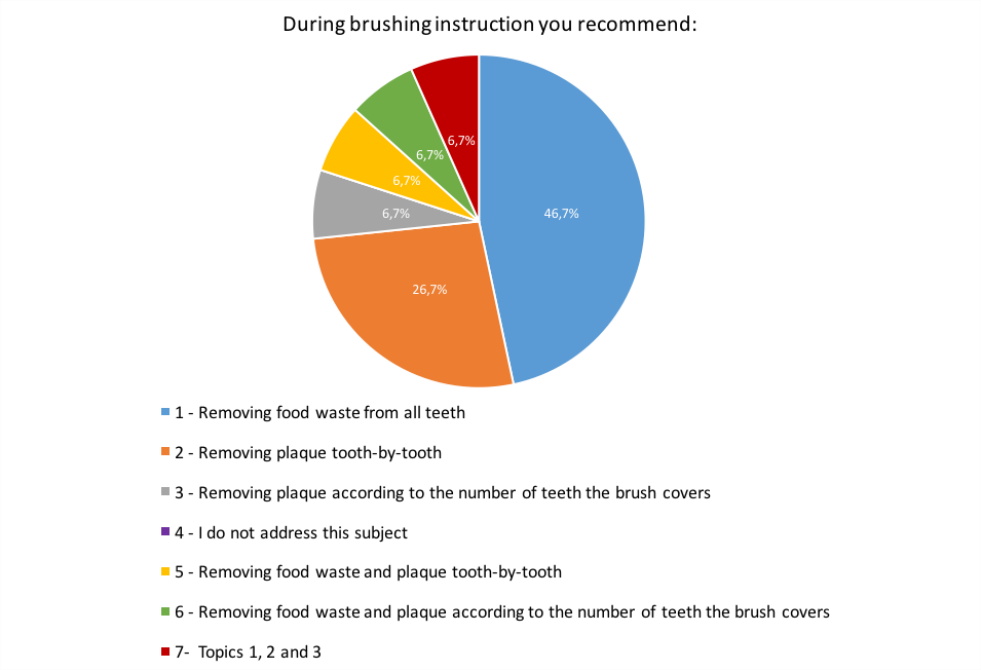
Graph 4



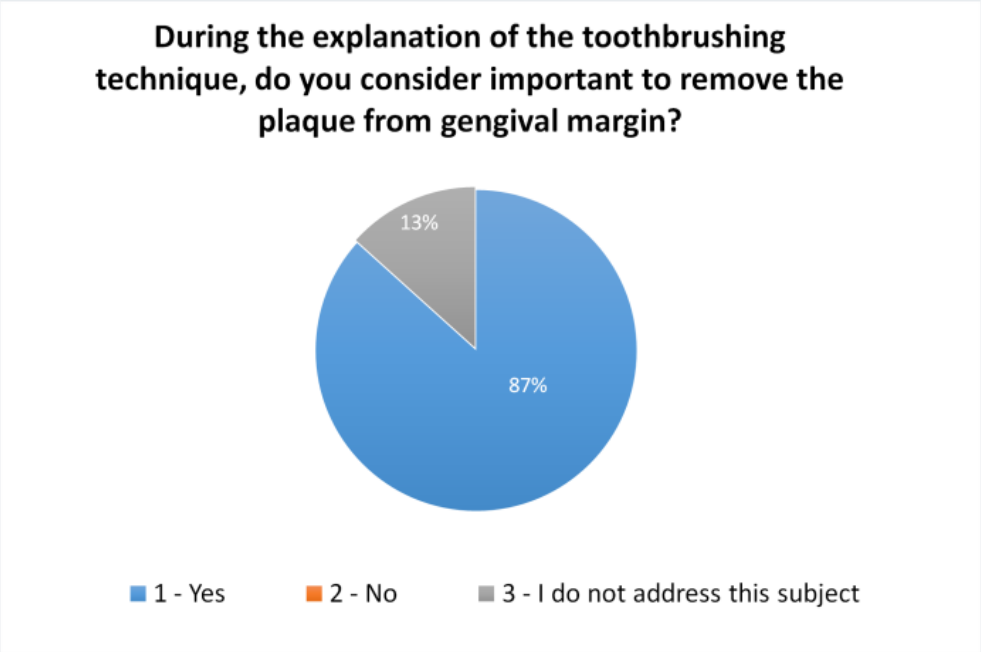
Graph 5



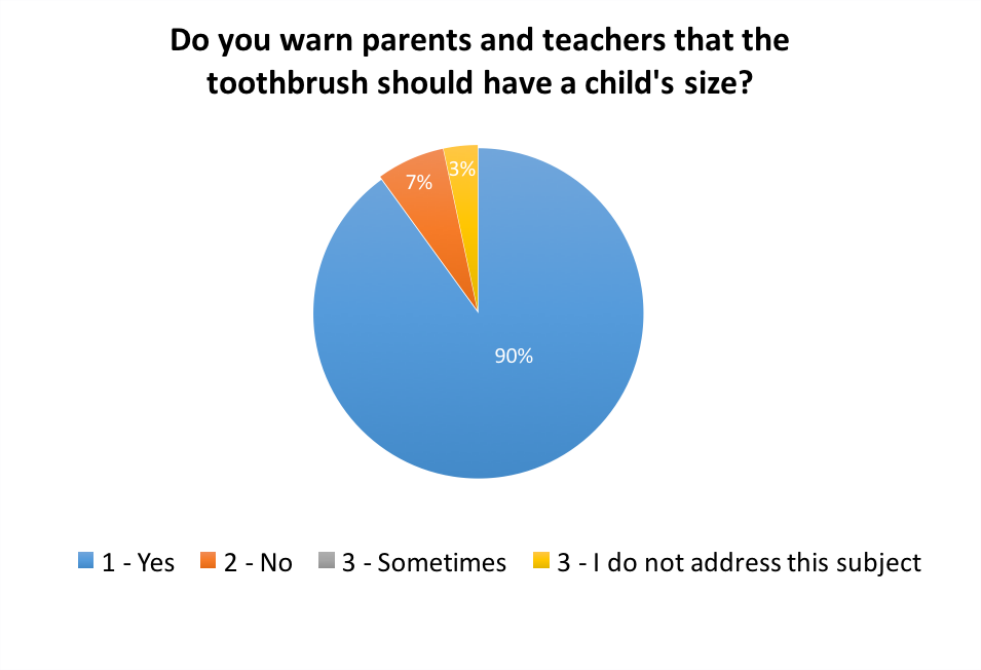
Graph 6



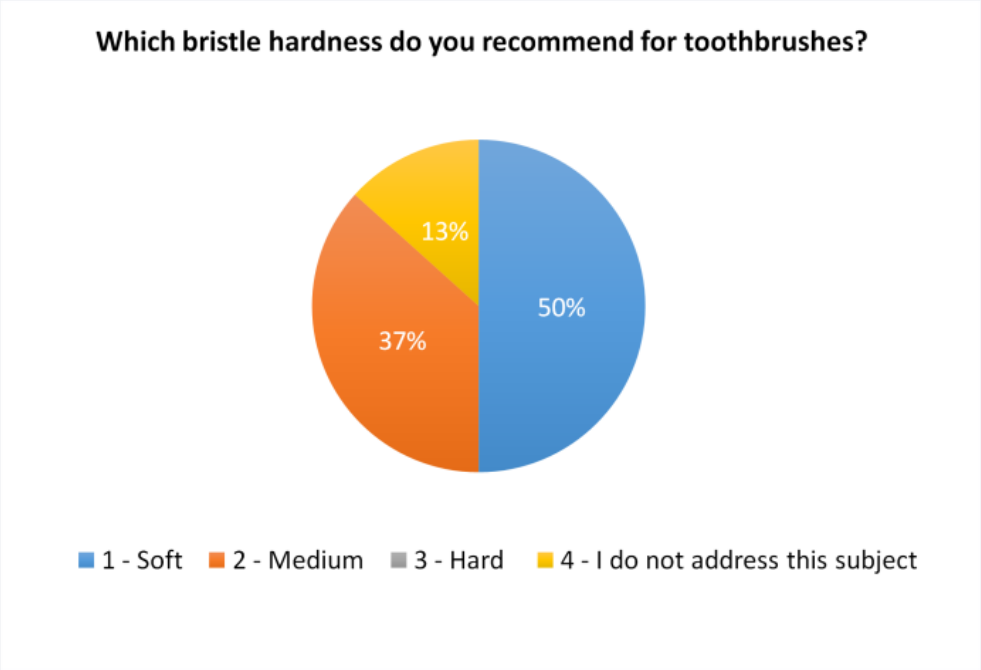
Graph 7



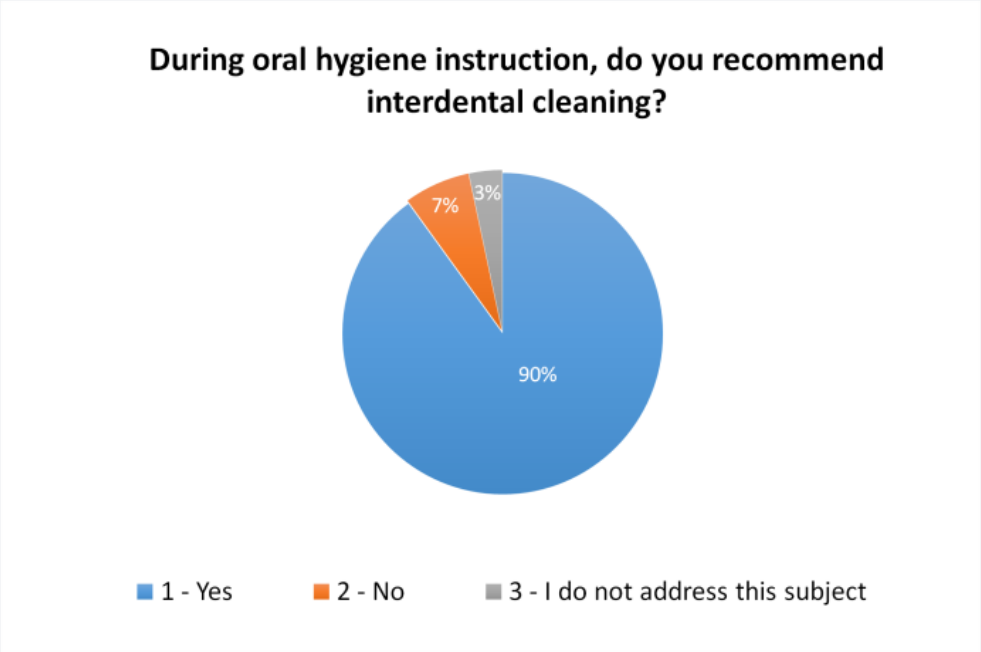
Graph 8



Graph 9



Graph 10



Graph 11

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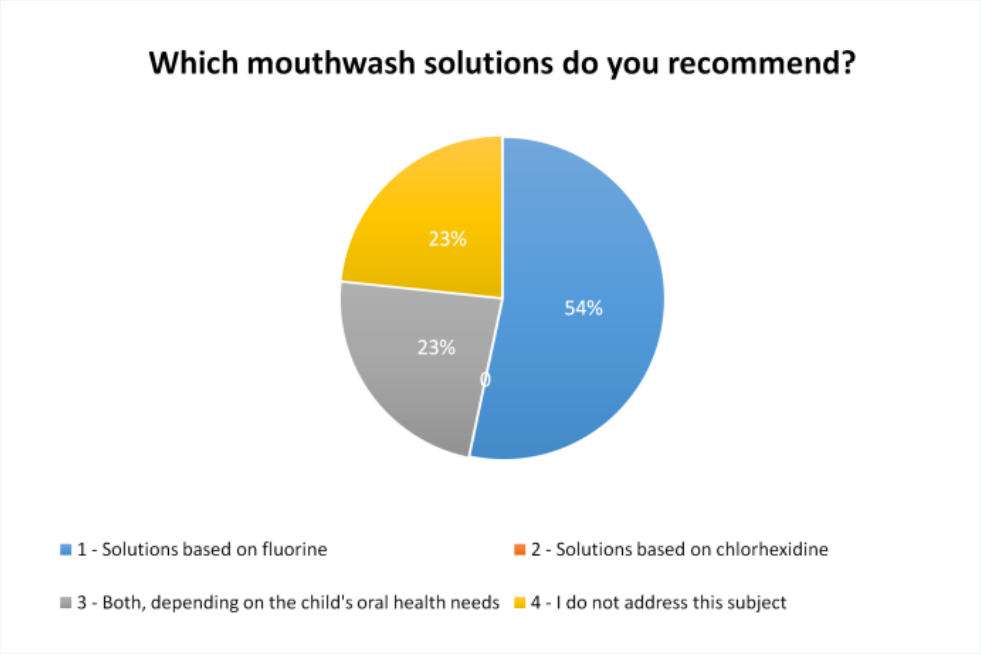
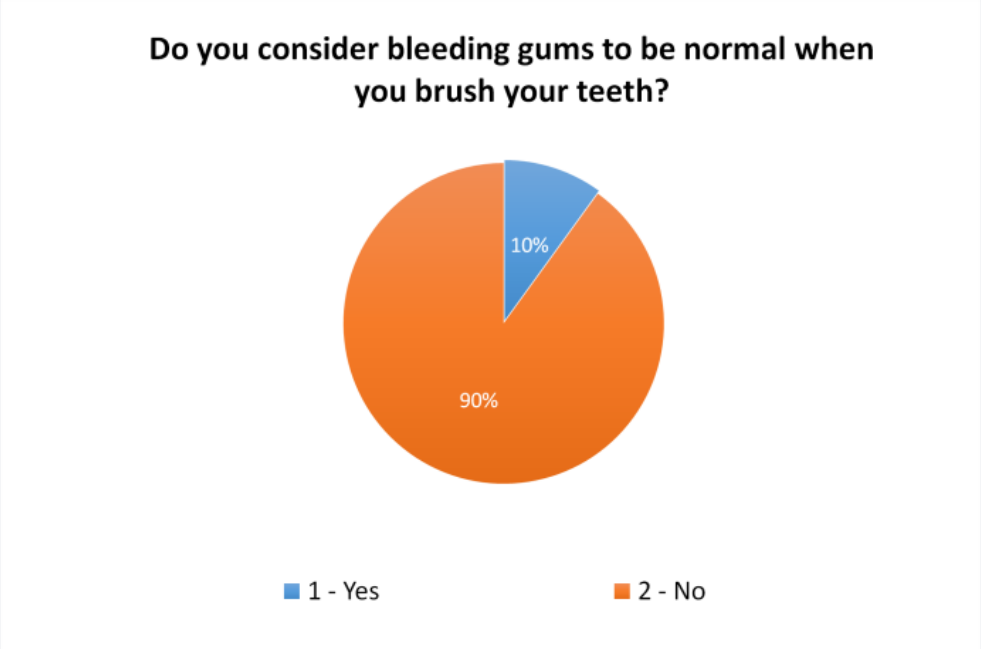
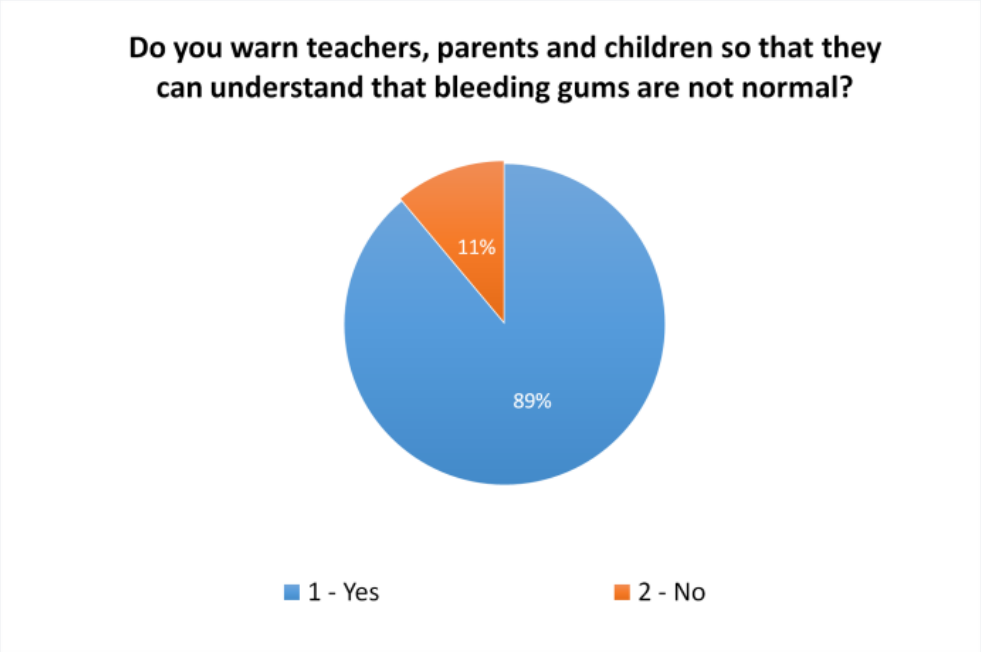


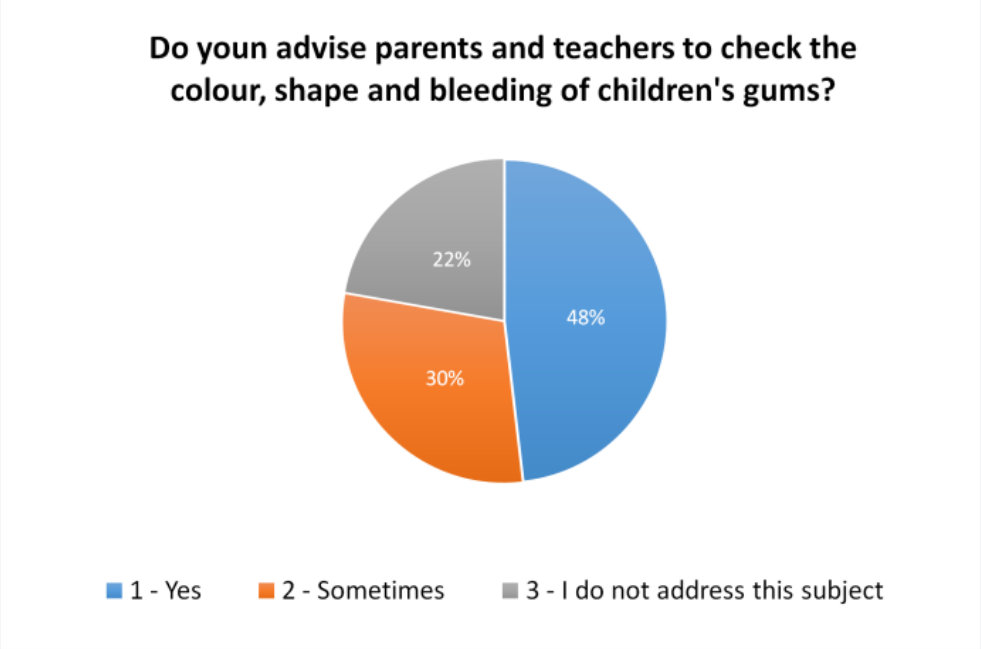
Graph 13



Graph 14



Graph 15



Graph 16